

The Duynie logo is located in the top right corner, featuring the brand name in a teal, sans-serif font. It is partially enclosed by a white circular shape with a teal border. The background of the entire page is a blurred field of golden-brown grain stalks under a bright, hazy sky.

Duynie

DuyGrain®

Upcycled Barley Protein

Cost-efficient proteins & fibres

Food industry challenges



Food manufacturers in 2026 are operating in a market defined by pressure and opportunities. Consumers expect healthier products, with clear protein and fibre benefits, while retailers demand sharper pricing and stronger value propositions. This creates a challenge for product development: **delivering higher nutritional quality without increasing cost**. Every ingredient decision now carries both nutrition and financial consequences.

Trend #1: Protein

Protein positioning continues to expand across European categories. In Germany alone, protein-related claims in meat substitutes have grown by 31% in 2025¹. Leading brands are responding with fortified launches and athlete-endorsed products to strengthen health credentials. However, increasing protein content often introduces formulation complexity, affecting cost structure, texture and processing performance.

1. Mintel 2025: Market dynamics meat substitutes DE



Trend #2: Fibremaxxing

Fibre is gaining renewed attention as 59% of consumers agree gut health is very important for their whole body². Despite this, fibre intake across Europe remains below recommended levels. Manufacturers are responding with fibre-enriched launches. However, increasing fibre content can affect texture, mouthfeel and flavour balance, particularly in refined or protein-focused formulations.

2. Innova Market Insights 2025: Top 10 trends 2026



Trend #3: Affordability

Economic uncertainty continues to shape purchasing behaviour, with over half of consumers in several European markets reporting cost-driven adjustments to their food choices³. Retailers respond with sharper pricing and expanded private label ranges with, for example hybrid meat. Manufacturers must therefore identify formulation strategies that protect margins without reducing product quality or nutritional value.

3. Euromonitor 2025: Consumer values in EU



The solution

In this environment, manufacturers are no longer looking for ingredients that solve a single challenge. They need solutions that contribute to **nutritional improvements while protecting cost-in-use** and maintaining processing stability. This shifts the focus from adding isolated functionality to ingredients designed to operate across multiple dimensions simultaneously.

Upcycled Barley Protein

Duynie's Upcycled Barley Protein called DuyGrain® is an innovative plant-based protein made from brewer's spent grain. Due to high amounts of proteins & fibres along with healthy unsaturated fats the ingredient is highly nutritious. With a wide variety of applications with functional benefits, making DuyGrain® cost-efficient, and being sustainably sourced it's a scalable circular ingredient solution.

Benefits across food segments

Increased nutrition



- ✓ High in protein
- ✓ High in fibre
- ✓ Low in carbohydrates
- ✓ Optimal amino acid profile

Cost-efficient



- ✓ Replace expensive ingredients
- ✓ Extend shelf-life freshness
- ✓ Increase dough weight & output
- ✓ Enhance seed attachment

Functional properties



- ✓ Great water & oil holding capacity
- ✓ Complementary flavour profiles
- ✓ Natural colourant for meat or bread
- ✓ Improves Nutri-Scores

Lowering scope 3 emissions*



- ✓ Low CO2 emissions
- ✓ Low land-use
- ✓ Low water use
- ✓ Screening LCA-available

*Based on indicative result from screening LCA showing DuyGrain® can have a lower footprint than conventional ingredients it may replace. Actual impact depends on product formulation, substitution rates, and supply-chain conditions.

Bakery

Replace:

Wheat flour, malt & cocoa

In applications:

Bread: whole wheat, rye, sourdough

Confectionary: cake, cookies, bonbons

Cereals & crackers

Nutri-bars



Meat

Replace:

Beef, pork, sheep, caramel extract & plant proteins (pea, soy, wheat & fava)

In applications:

Burgers, balls, roux & minced meat

Sausages, pulled pork & beef

Gyros & shawarma



Meals

Replace:

Wheat flour & malt

In applications:

Tortillas

Pizza dough

Pasta

Soup & sauces

Meat alternatives

Replace:

Plant proteins (pea, soy, wheat & fava), malt & caramel extract

In applications:

Burgers, balls & minced meat

Sausages, pulled pork & beef

Gyros & Shawarma

Hybrid meat 5% DuyGrain®



- ✓ 25% reduction in beef
- ✓ 18.8% lower cost-in-use
- ✓ 469% increase in fibre & stable in protein
- ✓ 21.7% fat reduction
- ✓ Savory taste & firm texture
- ✓ From Nutri-Score E **A B C D E** to D **A B C D E**
- ✓ May reduce scope 3 emissions*

Meat alternative 4.5% DuyGrain®



- ✓ 25% reduction in soy protein
- ✓ 10% lower cost-in-use
- ✓ **Lower energy cost** to produce TVP
- ✓ 19.3% increase in fibre
- ✓ High in fibre & protein claim
- ✓ **No masking** flavours needed
- ✓ Reduced typical 'plant flavour'
- ✓ Lower in kcal & sugar
- ✓ May reduce scope 3 emissions*

Bread 7% DuyGrain®



- ✓ Replaced wheat flour
- ✓ 7.9% lower cost-in-use
- ✓ 6.1% increase in protein & 8.2% in fibre
- ✓ 11.7% carb reduction
- ✓ Increase total dough weight by 8.4%
- ✓ 47% better seed attachment
- ✓ **Increase shelf life** freshness
- ✓ From source of to **rich in protein** claim
- ✓ May reduce scope 3 emissions*

Looking for the recipes or other product concepts?

Above are a selection out of the concepts we made. You can find more concepts on [our website](#). These include the recipes, all nutritional information, preparation methods, explanation on functional properties and advice from our application specialist. Scan the QR code or visit the [Duynie website](#) to discover the benefits for your product.



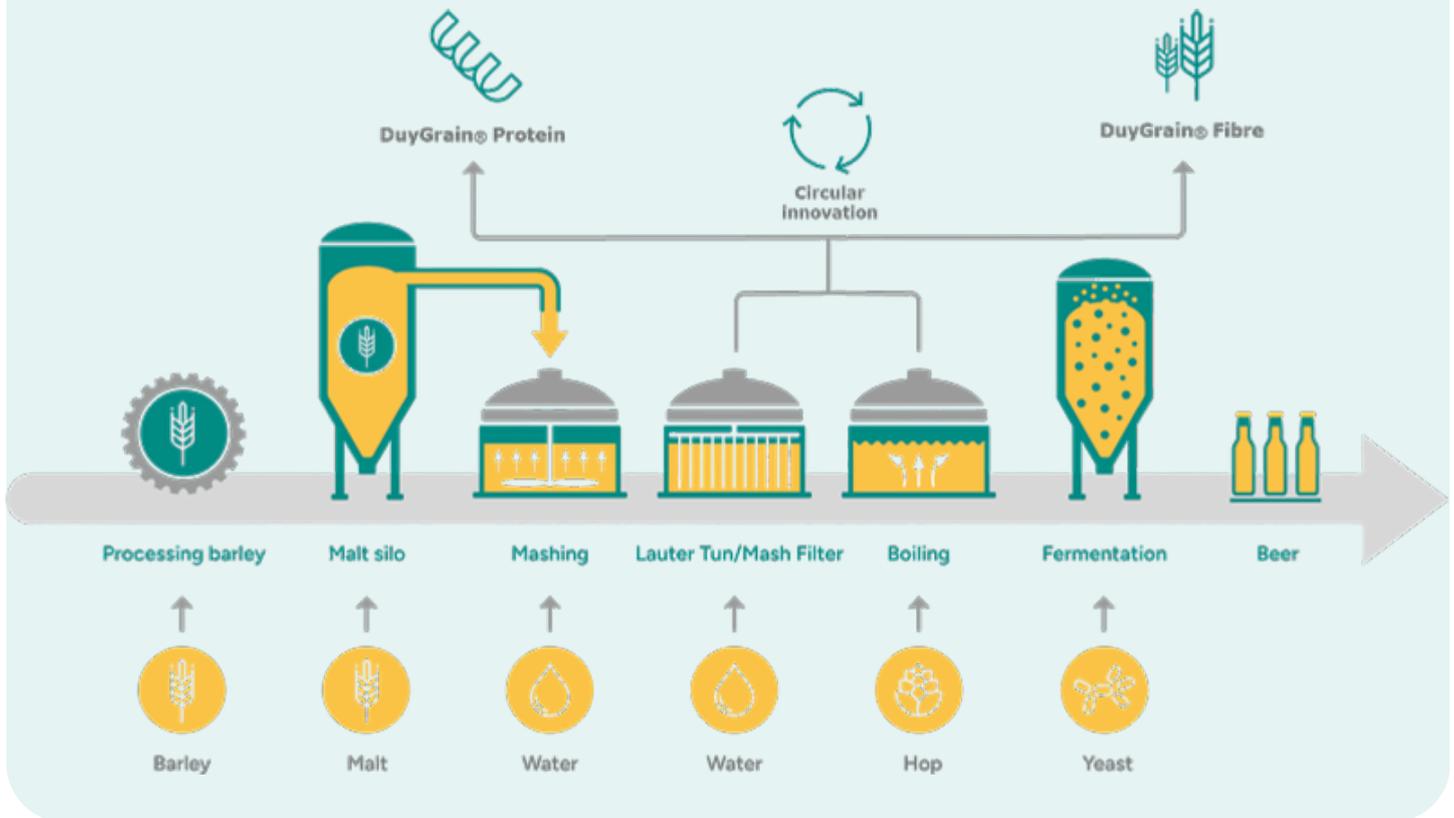
*Based on indicative result from screening LCA showing DuyGrain® can have a lower footprint than conventional ingredients it may replace. Actual impact depends on product formulation, substitution rates, and supply-chain conditions.

How DuyGrain® is made

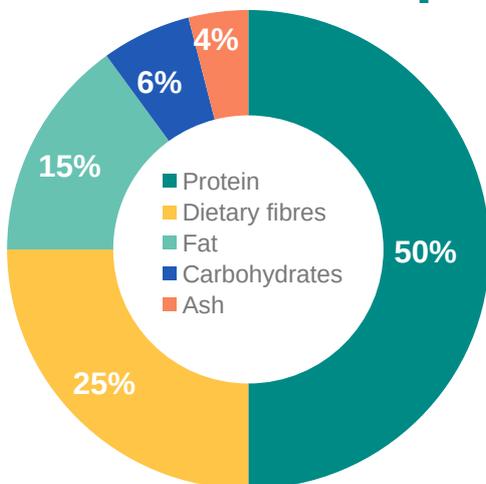


Circular food

Brewer's spent grain (BSG) is a co-product of beer production, and is obtained after the production of wort during the brewing process. BSG is a protein and fibre rich product. Duynie uses minimal mechanical processing to separate the spent grain into two separate fractions, a protein-rich fraction and a fibre-rich fraction. DuyGrain® is 100% spent grain, and not an additive.



Nutritional & product information



Colour	Light brown
Taste	Mild grainy
Certification	FSSC 22000
GMO free	Yes
Additives	No

All information

Are you looking for all nutritional, microbial, allergen and product information? Request the [spec sheet online](#).





1. Increased nutrition

Due to high amounts of proteins, fibres and low amounts of carbohydrates in DuyGrain® the nutritional value of various foods can be improved significantly. This in turn can **boost Nutri-Scores or claims on protein or fibre** content, helping your product stand-out on the shelf of retailers or reaching nutrition targets in food service.

2. Cost-efficient

Because of DuyGrain®'s ability to replace ingredients like beef, pork, sheep, malt, cocoa, caramel extract and plant proteins (pea, soy, wheat & fava) it's capable of **reducing the cost-in-use** for various foods. **Costs can even be further reduced** when making use of DuyGrain®'s unique functional properties.

3. Functional properties

DuyGrain® has unique functional properties, like its water & oil holding capacity that can **increase product weight and texture related shelf-life**. Due to DuyGrain® natural brown colour it acts as a **natural colourant** for example resulting in darker breads or meat (alternatives) with a natural cooked meat colour. In terms of taste DuyGrain® has **complementary flavour profiles** for a wide variety of foods.

4. Lowering scope 3 emissions*

Due to DuyGrain®'s co-product origin and minimal processing, it has a **low environmental footprint and contributes to circularity messaging**, helping food manufacturers relieve sustainability pressures. Together we can explore how DuyGrain® may reduce scope 3 emissions by replacing conventional (non-upcycled) ingredients*.

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Duynie

Creating new value

Duynie is the European market leader in the valorisation of co-products from the food, beverage, and biofuel industries. We continuously innovate production techniques to develop circular ingredients focused on helping the food industry reducing emissions (scope 3) and move towards a more sustainable future. Our food ingredients are made from 100% co-products, meaning they are sustainable from the start and add new value to the food industry. Our constant pursuit of the highest quality, most sustainably produced co-products, combined with our industry-leading expertise and large partnerships, help us to guarantee the supply of circular ingredients to the food industry today and tomorrow. In turn, helping you to meet your sustainability and business targets. Duynie is part of agricultural cooperative Royal Cosun.

Let's innovate together

The advantages of DuyGrain® vary by application. Ranging from hybrid meat burgers to brownies, and from vegan sausages to tortillas. With our deep ingredient expertise, our application specialists are ready to help you seamlessly integrate DuyGrain® into your products.

Whether your goal is to: incorporate proteins and fibres to boost Nutri-Scores, reduce scope 3 emissions or lower cost-in-use without compromising performance, our experts are confident and committed to finding the right solution for your challenge.

Interested in the possibilities?

Please [contact us](#) or visit [our website](#)

